



Professor Paulus Pieter Bijlaard (1898 – 1967)

In memory of Professor Bijlaard by Nephi A. Christensen, Solomon C. Hollister and Edmunt T. Cranch:

Professor Bijlaard was a civil engineer with an international reputation in such diverse fields as civil, mechanical, and aeronautical engineering; theoretical and applied mechanics; and geophysics. His original writings are in Dutch, German, French, and English. They deal with practical problems in structural engineering, analytical and experimental research in plasticity and elastic stability, and research in the formation of folds in the earth's crust. He left more than a hundred papers covering his work in the Netherlands, East India, and the United States. He was a pioneer in the basic theory of plasticity.

Paul Bijlaard was born in Rockanje Province, Holland, December 2, 1898, and was graduated as a civil engineer from the Technical University, Delft, in 1920. During the next eight years he was a bridge engineer for the Netherlands East Indies State Railways, working on the design of bridges and other important structures. In 1928 he was appointed Professor of Bridge and Structural Engineering at the Technical University at Bandoeng, Java, a position he held until 1947. During that period he served as consultant on many steel and concrete bridges for railway and highway use, and on large dry docks and other structures for a naval base. He also investigated the plastic behavior of steel and pioneered in the theory of plasticity and its use in geophysics and in structural design. In 1936 and again in 1946 he served the University as Rector Magnificus.

Because of great savings which he was able to effect through ingenious and novel designs in the consulting services rendered the government, Queen Wilhelmina in 1941 conferred upon Professor Bijlaard knighthood in the Order of the Netherlands Lions, the highest civil award of Holland.

During much of the Japanese occupation of Java in World War II, Professor Bijlaard was a prisoner of war and was confined three years in a concentration camp. It was characteristic of him that although his diet was scarcely sufficient to sustain life, after a day of sawing logs by hand, he would devote the evening to studies in his professional field. Before his escape he found it necessary to burn his notes in order to avoid giving information to the enemy.

He was appointed in 1947 Professor of Advanced Problems on Structural Engineering, a special chair created for him, at the Technical University at Delft, Holland.

Professor Bijlaard came to Cornell as Associate Professor of Civil Engineering in February, 1949, and was made Professor in 1951. In 1957 he transferred to the Department of Mechanics, becoming Professor of Theoretical and Applied Mechanics. In 1966 he became Professor Emeritus.

Since coming to the United States Professor Bijlaard made significant contributions to several branches of engineering in connection with his consulting work. His researches into thick and thin shells have led to a more accurate analysis of pressure vessels, which is now in general use. It has immediate application to high-pressure steam generators, large chemical reaction vessels, and nuclear reactor vessels. He was able to analyze the stresses in the “sandwich plate” — two metallic sheets held apart by a light, relatively weak filler—now in use to produce locally a rigid, smooth skin for supersonic aircraft. He extended his theory of plasticity into the determination of buckling strength of plates and columns in the range beyond the elastic limit.

Professor Bijlaard’s writings are characterized by a keen insight into the actions involved, together with strict and rigorous reasoning of his analysis. His treatments were developed with the need of the engineer designer in mind. He always considered himself an engineer.

Professor Bijlaard became a naturalized citizen in 1954. On September 16, 1931, he married Claire Raden Ajoe Poean Radjainten of Bandoeng. Besides his widow, he leaves three children and two grandchildren.

His colleagues will remember Paul Bijlaard for his warm friendliness, his enthusiasm for his field of work, his eagerness to be helpful to colleagues and students, his insistence on high standards both for himself and his students. His memory will be cherished with warm affection and deep respect.